

Coast Guard, DHS

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generator or generators having sufficient capacity to supply the ship's service loads can be automatically brought on line prior to the main-engine-dependent generator tripping off-line due to a change in the speed or direction of the main propulsion unit.

[CGD 94-108, 61 FR 28277, June 4, 1996; 61 FR 36787, July 12, 1996]

§ 111.10-5 Multiple energy sources.

Failure of any single generating set energy source such as a boiler, diesel, gas turbine, or steam turbine must not cause all generating sets required in § 111.10-3 to be inoperable.

§ 111.10-7 Dead ship.

(a) The generating plant of each self-propelled vessel must provide the electrical services necessary to start the main propulsion plant from a dead ship condition.

(b) If the emergency generator is used for part or all of the electric power necessary to start the main propulsion plant from a dead ship condition, the emergency generator must be capable of providing power to all emergency lighting, emergency internal communications systems, and fire detection and alarm systems in addition to the power utilized for starting the main propulsion plant. Additional requirements are in § 112.05-3(c) of this chapter.

[CGD 74-125A, 47 FR 15236, Apr. 8, 1982, as amended by CGD 94-108, 61 FR 28277, June 4, 1996]

§ 111.10-9 Ship's service supply transformers; two required.

If transformers are used to supply the ship's service distribution system required by this subpart for ships and mobile offshore drilling units, there must be at least two installed, independent power transformers. With the largest transformer out of service, the capacity of the remaining units must be sufficient to supply the ship service loads.

NOTE TO § 111.10-9: A ship's service supply system would consist of transformers, over-current protection devices, and cables, and would normally be located in the system be-

tween a medium voltage bus and a low voltage ship's service switchboard.

[CGD 94-108, 61 FR 28277, June 4, 1996; 61 FR 33045, June 26, 1996]

Subpart 111.12—Generator Construction and Circuits

§ 111.12-1 Prime movers.

(a) Prime movers must meet section 58.01-5 and 46 CFR subpart 58.10 except that those for mobile offshore drilling units must meet Part 4, Chapter 3, sections 4/3.17 and 4/3.19 of the ABS MODU Rules (incorporated by reference; see 46 CFR 110.10-1). Further requirements for emergency generator prime movers are in 46 CFR subpart 112.50.

(b) Each generator prime mover must have an overspeed device that is independent of the normal operating governor and adjusted so that the speed cannot exceed the maximum rated speed by more than 15 percent.

(c) Each prime mover must shut down automatically upon loss of lubricating pressure to the generator bearings if the generator is directly coupled to the engine. If the generator is operating from a power take-off, such as a shaft driven generator on a main propulsion engine, the generator must automatically declutch (disconnect) from the prime mover upon loss of lubricating pressure to generator bearings.

[CGD 94-108, 61 FR 28277, June 4, 1996; 61 FR 33045, June 26, 1996, as amended at 62 FR 23907, May 1, 1997; USCG-2003-16630, 73 FR 65196, Oct. 31, 2008]

§ 111.12-3 Excitation.

In general, excitation must meet sections 4-8-3/13.2(a), 4-8-5/5.5.1, 4-8-5/5.5.2, and 4-8-5/5.17.6 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10-1), except that those for mobile offshore drilling units must meet Part 4, Chapter 3, sections 4/3.21.1 and 4/3.23.1 of the ABS MODU Rules (incorporated by reference; see 46 CFR 110.10-1). In particular, no static exciter may be used for excitation of an emergency generator unless it is provided with a

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permanent magnet or a residual-magnetism-type exciter that has the capability of voltage build-up after two months of no operation.

[USCG-2003-16630, 73 FR 65196, Oct. 31, 2008]

§ 111.12-5 Construction and testing of generators.

Each generator must meet the applicable requirements for construction and testing in section 4-8-3 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10-1) except that each one for a mobile offshore drilling unit must meet the requirements in part 4, chapter 3, section 4 of the ABS MODU Rules (incorporated by reference; see 46 CFR 110.10-1).

[USCG-2003-16630, 73 FR 65196, Oct. 31, 2008]

§ 111.12-7 Voltage regulation and parallel operation.

Voltage regulation and parallel operation must meet:

(a) For AC systems: sections 4-2-3/7.5.2, 4-2-4/7.5.2, 4-8-3/3.13.2, and 4-8-3/3.13.3 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 110.10-1);

(b) For DC systems: section 4-8-3/3.13.3(c) of the ABS Steel Vessel Rules, and IEC 60092-202 and IEC 60092-301 (both incorporated by reference; see 46 CFR 110.10-1); and

(c) For mobile offshore drilling units: Part 4, Chapter 3, section 4/3.21.2, 4/3.21.3, 4/3.23.2, and 4/3.23.3 of the ABS MODU Rules (incorporated by reference; see 46 CFR 110.10-1).

[USCG-2003-16630, 73 FR 65196, Oct. 31, 2008, as amended by USCG-2013-0671, 78 FR 60153, Sept. 30, 2013]

§ 111.12-9 Generator cables.

(a) The current-carrying capacity of generator cables must not be:

(1) Less than 115 percent of the continuous generator rating; or

(2) Less than 115 percent of the overload for a machine with a 2 hour or greater overload rating.

(b) Generator cables must not be in the bilges.

§ 111.12-11 Generator protection.

(a) *Applicability.* This section applies to each generator except a propulsion generator.

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(b) *General.* Each ship's service generator and emergency generator must be protected by an individual, tripfree, air circuit breaker whose tripping characteristics can be set or adjusted to closely match the generator capabilities and meet the coordination requirements of Subpart 111.51. Each circuit breaker must contain the trips required by this section.

(c) *Type of trips.* A circuit breaker for a generator must:

(1) Open upon the shutting down of the prime mover;

(2) Have longtime overcurrent trips or relays set as necessary to coordinate with the trip settings of the feeder circuit breakers; and

(3) Not have an instantaneous trip with the exception that an instantaneous trip is required if:

(i) Three or more alternating-current generators can be paralleled; or

(ii) The circuit breaker is for a direct current generator.

(d) *Setting of longtime overcurrent trips.* The pickup setting of the longtime overcurrent trip of a generator circuit breaker must not be larger than:

(1) 115 percent of the generator rating for a continuous rated machine; or

(2) 115 percent of the overload rating for a machine with a 2-hour or greater overload rating.

(e) *Setting of instantaneous trips.* The instantaneous trip of a generator circuit breaker must be set above, but as close as practicable to, the maximum asymmetrical short circuit available from any one of the generators that can be paralleled.

(f) *Reverse-power and reverse-current trips.* Each generator arranged for parallel operation must have reverse-power or reverse-current trips.

(g) *Location.* A ship's service generator overcurrent protective device must be on the ship's service generator switchboard. The generator and its switchboard must be in the same space. (For the purposes of this section, the following are not considered separate from the machinery space: (1) A control room that is inside of the machinery casing and (2) a dedicated switchgear and semiconductor rectifier (SCR) compartment on a mobile offshore drilling unit that is separate from but